CITIZEN

Service Manual

Model: CBM1000

Line Thermal Printer

Rev. 1.00 Newly issued on Sep. 14. 1999

Japan CBM Corporation
Information Systems Div.

INTRODUCTION

This manual describes the disassembly, reassembly, and maintenance procedures of the line thermal printer CBM1000. It is intended for field maintenance men.

FEATURES

The CBM1000 is a compact-sized, line thermal printer developed for a variety of applications. It has abundant built-in features, and can be used as a data communication terminal, POS terminal, kitchen terminal and for other applications. Prior to using the printer, read this manual thoroughly to understand its contents.

1. Paper drop-in mechanism; when supplying or replacing paper rolls, all you have to do is just drop a paper roll into the printer and close its cover. This will facilitate paper handling and head cleaning greatly.
2. High speed (100 mm/s), and low-noise thermal printing.
3. Front-side paper ejection method, which allows the printer to be installed and used anywhere with few restrictions.
4. Hermetic covering structure, which helps prevent any foreign matter or liquid from getting into the printer.
5. Built-in input buffer.
6. Bar-code printing (Possible using special commands).
7. Page mode, which allows you to lay out pages freely.
8. Registration of user-defined characters and logos into flash memory.
9. Built-in Drawer Kick-Out interface.
10. Auto cutter mechanism provided as a standard unit.
11. Selection possible, as required, from two types: Easy-to-handle, built-in power supply type, and lightweight flat AC adapter type.
12. Use of 58 mm wide paper rolls possible by using the partition supplied.

CONTENTS

✳ For the auto cutter unit (ACS-130), see the separate Service Manual.

1. HANDLING AND MAINTENANCE OF PRINTER

See the User's Manual coming with the printer body.

2. SPECIFICATIONS

2.1 Basic Specifications

Item \ Model	CBM1000–RF120S/A CBM1000–PF120S/A	CBM1000–RF230S/A CBM1000–PF230S/A	CBM1000–RF024D CBM1000–PF024D
Printing system	Line thermal dot printing method		
Printing width	72 mm/576 dots, (54 mm/432 dots) *1		
Dot density	8 × 8 dots/mm (203 dpi)		
Printing speed	100 mm/sec (Fastest, print density level 2), (800 dot lines/sec)		
Printing columns	Font A: 48/42/36/30 columns (12 × 24) Font B: 64/56/48/40 columns (9 × 24)		
Character size	Font A: 1.25 × 3.00 mm; Font B: 0.88 × 3.00 mm		
Character types	Alphanumeric characters, international characters, Codepages PC437, Katakana, PC850, PC860, PC863, PC865, PC852, PC866, PC857, and Windows codepage		
Logo registration/print	Capable of registering user-defined characters and logos into flash memory.		
Bar code types	UPC-A/E, JAN(EAN) 13/8 column, ITF, CODE 39, CODE 128, CODEBAR, CODE 93		
Line spacing	4.23 mm (1/6 inch); selectable using commands.		
Paper	Thermal paper roll: 80 mm (58 mm) × ø83		
Interface	Serial (RS-232C) Parallel (IEEE 1284 and Centronics compliant)		
Input buffer	4K bytes (72 bytes selectable with a DIP switch)		
Supply voltage	S type: AC 120/230 V ±10%; A type/D type: DC 24 V ±7%		
Power consumption	100 W (Max.)		
AC adapter spec.	Rated input : AC 120 ~ 240 V, 50/60 Hz, 120 VA Rated output: DC 24 V, 1.9 A		—
Type	31AD-U	31AD-E	—
Weight	S type: Approx. 2.0 Kg; A type/D type: Approx. 1.4 Kg		
Outer dimensions	S type: 145(W) × 190 (D) × 157 (H) mm A type/D type: 145(W) × 190 (D) × 114 (H) mm		
Operating temperature and humidity	5 ~ 40ºC, 35 ~ 85 % RH (No dew condensation)		
Storage temperature and humidity	-20 ~ 60ºC, 10 ~ 90% RH (No dew condensation)		
Reliability	Printing head life: Pulse resistance: 1×10^8 pulses (Print ratio 12.5%) Wear resistance: 100 km (At normal temperature/humidity with recommended thermal paper) Auto cutter life: 500,000 times of cutting (At normal temperature/humidity with recommended thermal paper)		
Safety Standard *2	UL, C-UL, FCC Class-A	TUV, GS, CE marking	UL, C-UL, FCC Class-A, TUV, GS, CE marking

*1 Represents the value when a 58 mm wide paper roll is used (User selectable).
*2 Represents the safety standards acquired when CBM-made adapters (31AD series) are used.

3. DISASSEMBLY AND REASSEMBLY

For maintenance operations, note the following:

Notes:

(1) Do not disassemble/reassemble or adjust the machine, if it functions properly. Particularly, do not loosen screws on any component, unless necessary.

(2) After completing an inspection and before turning on the power, be sure to check that there is no abnormality.

(3) During maintenance, be careful not to leave parts or screws unattached or loose inside the printer.

(4) When handling the thermal head or electronic component, do not use gloves or other aids which can easily cause static electricity.

(5) When disassembling or reassembling, check wires and cables for any damage. Do not run them into a narrow space or set them in improper positions.

(6) After reassembling, apply lubricant as required.

Maintenance Tools:

(1) Philips screwdrivers #1 and #2

(2) Tweezers

(3) Round nose pliers

(4) Cutting nipper

(5) Brush for lubrication

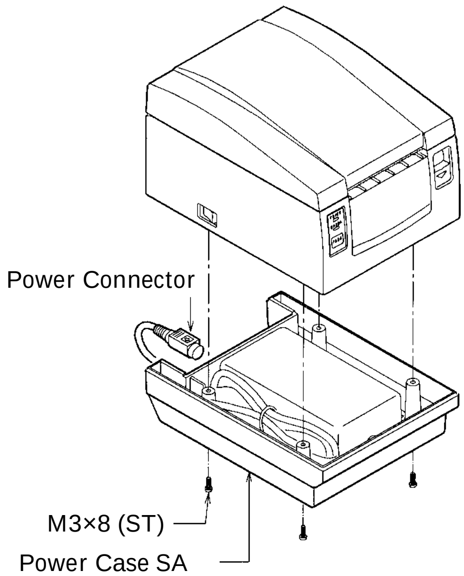
3.1 Disassembly Procedure

Disassembly procedure consists of the following two sections.

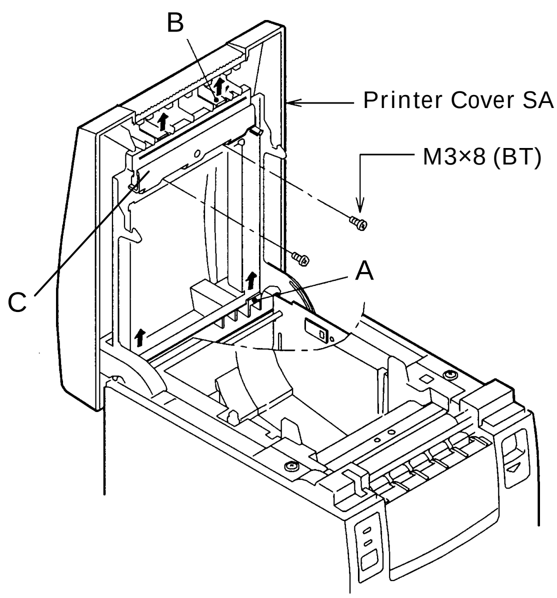
- Main body
- Mechanism

3.1.1 Disassembly Procedure for Main Body

1. Removing the Power Case SA (for AC Adaptrer Built-in Type)
   (1) Disconnect the power connector from the unit.
   (2) Remove the four screws M3 ×8 (ST) and detach the power case SA.

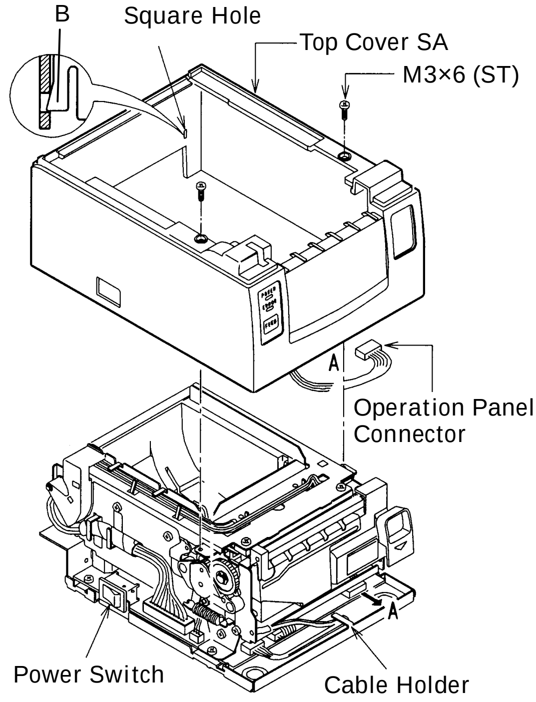


2. Removing the Printer Cover SA
   (1) Open the printer cover SA.
   (2) Unhook the parts “A” and detach the printer cover SA.
   (3) Remove the two screws M3 × 8 (BT). While opening the parts “B”, remove the part “C”.

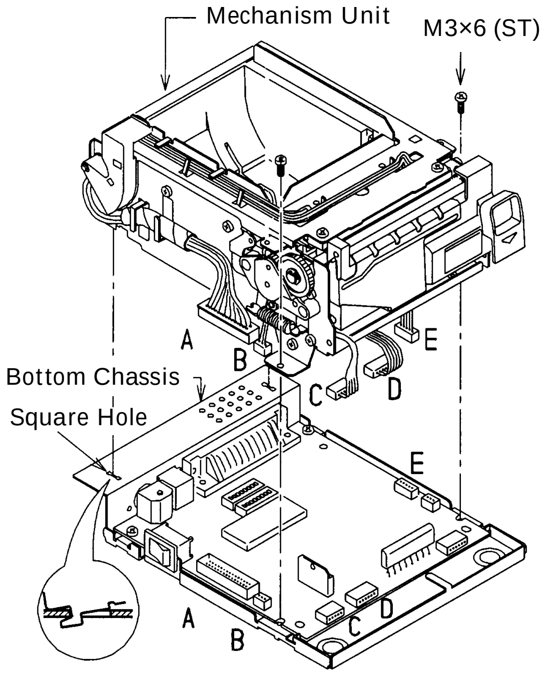


3. Removing the Top Cover SA
   (1) Remove the printer cover SA.
   (2) Remove the two screws M3 × 6 (ST).
       While unhooking the part “B” of the frame from the top cover SA, lift the top cover. At this time, avoid the power switch.
   (3) Unhook the operation panel cable from the cable holder, disconnect the operation panel connector from the control PCB assy, and remove the top cover SA.

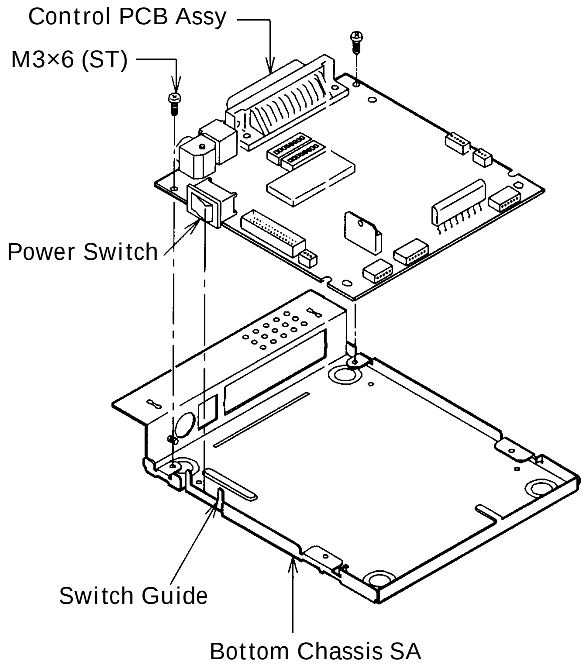
   Note on reassembling:
       When reassembling the top cover SA, be sure that the part “B” of the frame is securely inserted into the square hole at the back of the top cover SA as shown in the figure.



4. Removing the Mechanism Unit
   (1) Remove the top cover SA.
   (2) Remove the two screws M3 × 6 (ST).
   (3) Disconnect the five connectors “A to E” from the control PCB assy.
   (4) Lift the front part of the mechanism unit a little and remove the mechanism unit by disengaging it from two square holes on the bottom chassis.



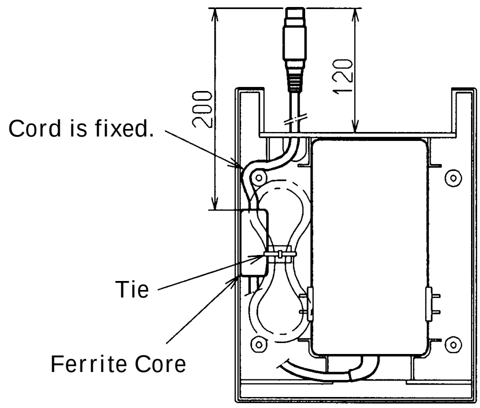
5. Removing the Control PCB Assy
   (1) Remove the mechanism unit.
   (2) Remove the two screws M3 × 6 (ST).
   (3) Lift the front part of the control PCB assy to disengage the power switch from the switch guide of the bottom chassis SA.
   Then pull the control PCB assy toward you to remove it.

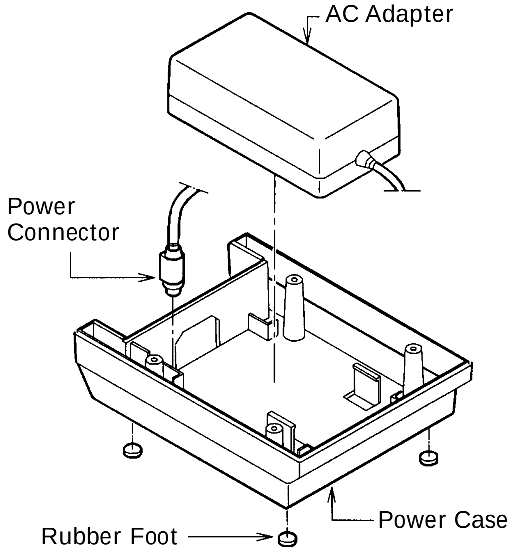


6. Removing the AC Adapter
   (1) Remove the power case SA.
   (2) Cut the tie for the power cord.
   (3) Detach the AC adapter from the power case by lifting it upward.
   (4) Detach the power cord of the AC adapter from the power case SA.
   (5) Remove the power connector of the AC adapter by passing it through the hole on the power case SA.
   (6) Remove the four rubber feet from the power case.

Note on reassembling:

Run the cable of the AC adapter as shown in the figure. At this time, run it so that the ferrite core is located as shown in the figure (approx. 200 mm from the end of the power connector).

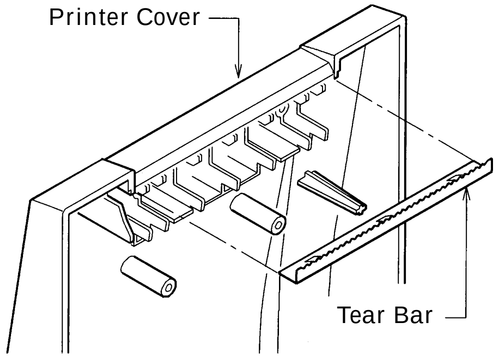




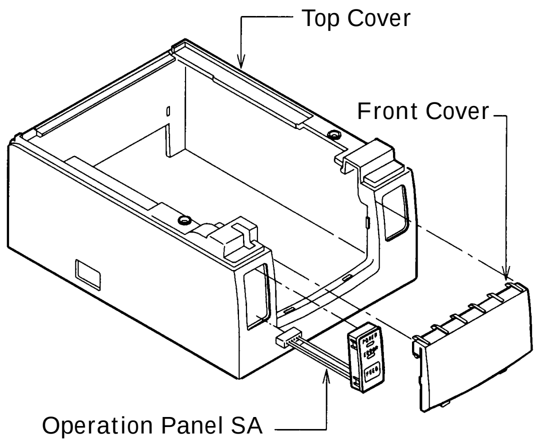
7. Removing the Tear Bar
   (1) Open the printer cover.
   (2) Remove the tear bar from the printer cover SA by pulling it as shown in the figure.

   Note on reassembling:

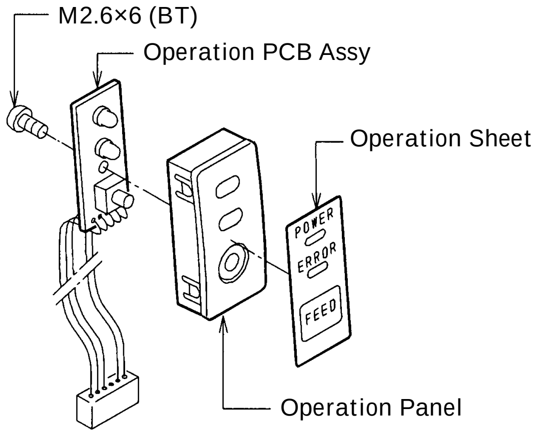
   When reassembling, press-fit it to the printer cover.



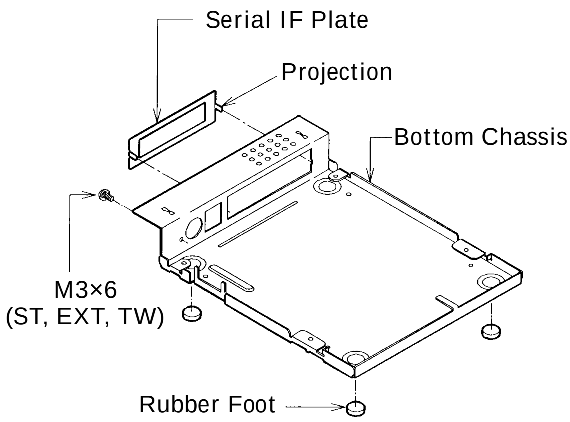
8. Removing the Operation Panel SA and Front Cover
   (1) Remove the top cover.
   (2) Remove the operation panel SA to the front by pushing its back.
   (3) Remove the front cover.



9. Removing the Operation PCB Assy
   (1) Remove the operation panel SA.
   (2) Remove the one screw M2.6 × 6 (BT) and detach the operation PCB assy.
   (3) Peel off the operation sheet from the operation panel.

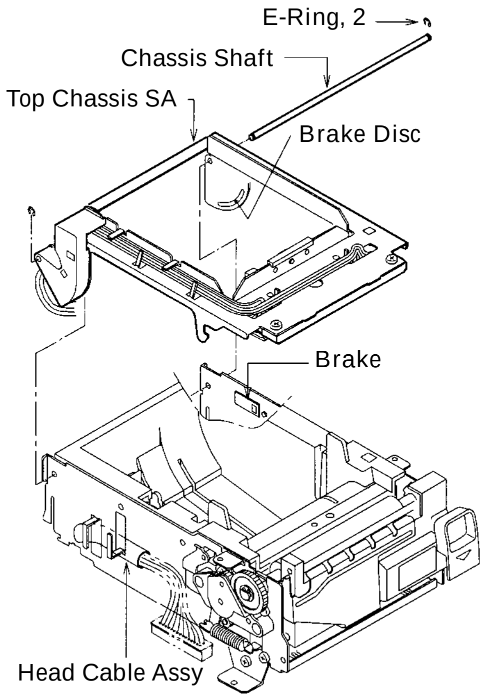


10. Removing the Serial IF Plate
    (1) Remove the control PCB assy.
    (2) Straighten the projections of the serial IF plate and remove it from the bottom chassis SA. (For serial IF type)
    (3) Remove the one screw M3 × 6 for frame ground (FG) and rubber feet from the bottom chassis.



3.1.2 Disassembly Procedure for Mechanism Unit

1. Removing the Top Chassis SA
    (1) Remove the Mechanism Unit referring to 3.1.1-4 "Removing the Mechanism Unit".
    (2) Unhook the head cable assy.
    (3) Disengage the E-ring 2 at the left end of the chassis shaft.
    (4) Pull out the chassis shaft to the right.
    (5) While disengaging the projection of the brake from the brake disc of the top chassis SA, remove the top chassis SA.

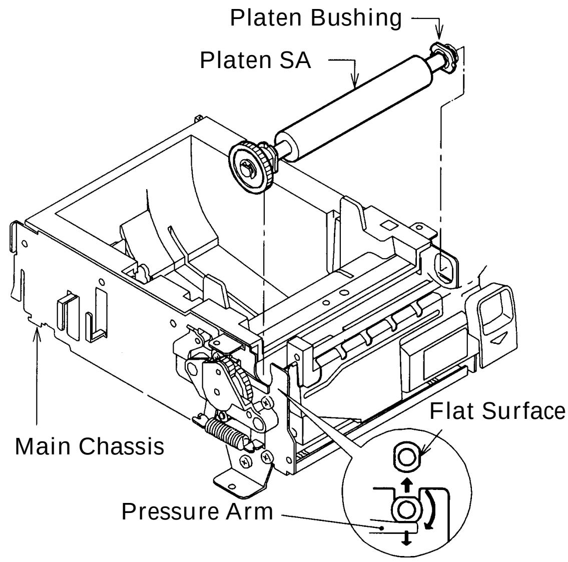


2. Removing the Platen SA

(1) While pushing the pressure arm downwardly, turn the platen bushing by 90 degrees in either direction. (Then, the flat surfaces of the left side platen bushing are set in vertical.)

(2) Lift the left side platen SA to disengage it from the U-shaped groove on the main chassis.

(3) Pull the platen SA to the left to remove it from the main chassis.



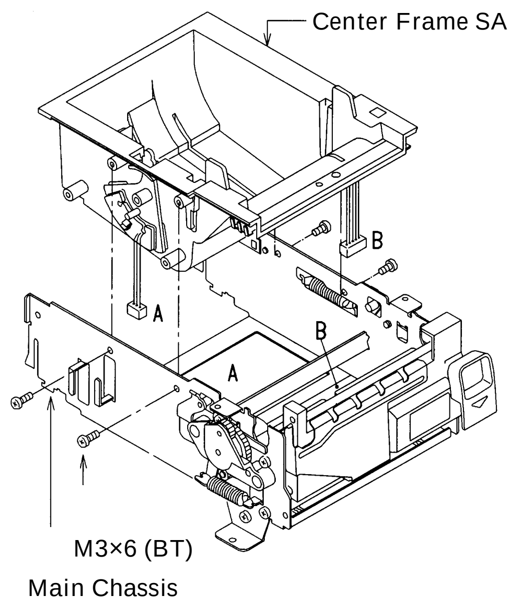
3. Removing the Center Frame SA

(1) Remove the four screws M3 × 6 (BT).

(2) Remove the center frame SA from the main chassis by lifting it upward.

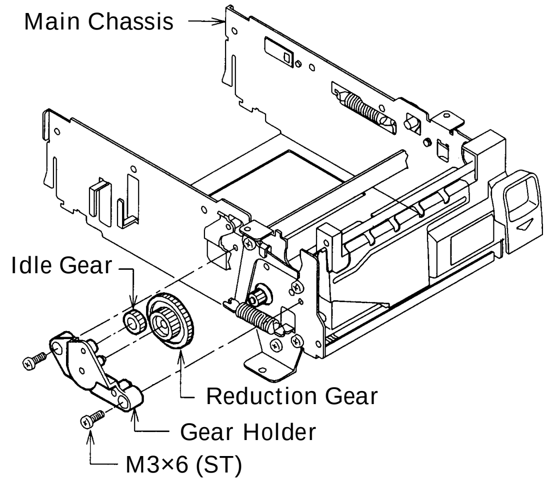
Note on reassembling:

Pass the connector A and B through the holes A and B on the main chassis, respectively.

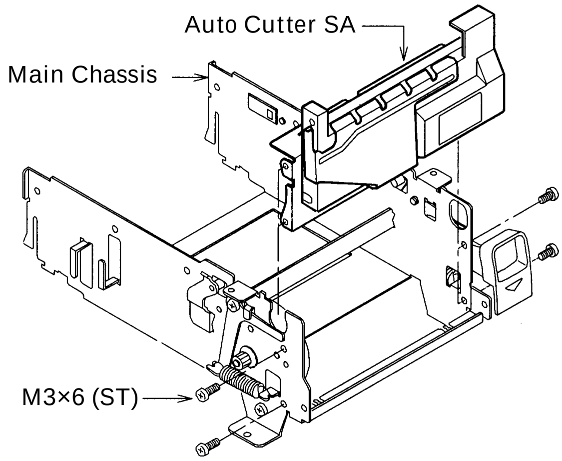


4. Removing the Gears
   (1) Remove the two screws M3 × 6 (ST) and remove the gear holder.
   (2) Remove the reduction gear and idle gear from the gear holder, in that order.

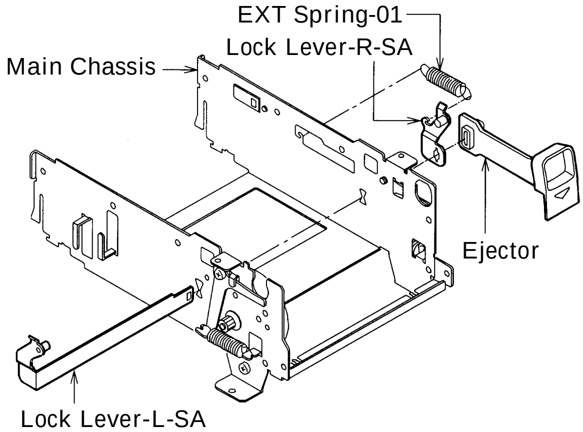
   Note on reassembling:
   Apply grease (Molykote EM-10L) to the shafts of the gear holder.



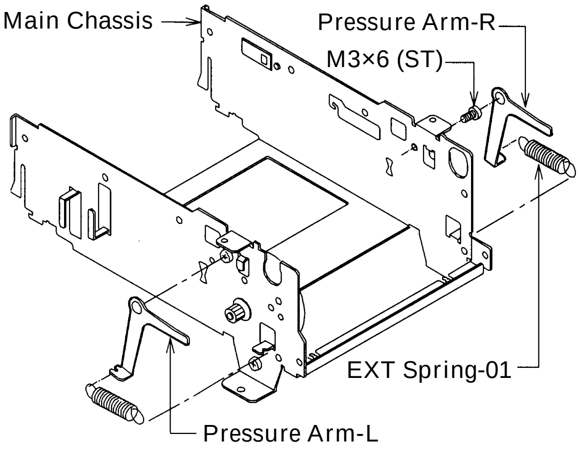
5. Removing the Auto Cutter SA
   (1) Remove the four screws M3 × 6 (ST) and remove auto cutter SA.



6. Removing the Lock Levers
   (1) Remove the EXT spring-01.
   (2) Pull out the ejector.
   (3) Remove the lock lever-R-SA from the right end of the lock lever-L-SA.
   (4) Remove the lock lever-L-SA by pulling it to the left.



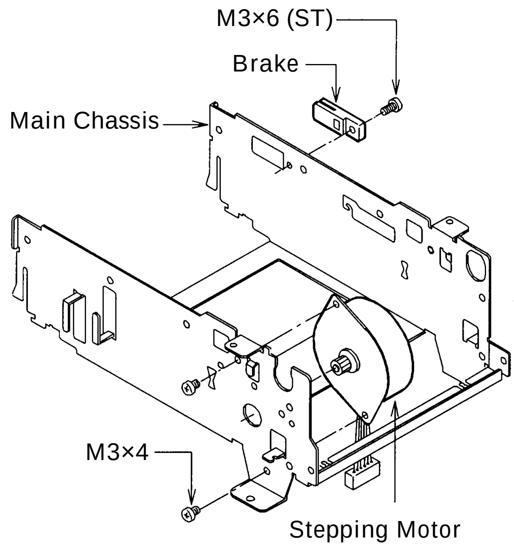
7. Removing the Pressure Arms
   (1) Disengage the EXT spring-01 from the pressure arm-L and then remove the pressure arm-L from the main chassis.
   (2) Disengage the EXT spring-01 from the pressure arm-R and then remove the pressure arm-R from the main chassis.
   (3) Remove the one screw M3 × 6 (ST) from the main chassis.



Note on reassembling:

Securely insert the pressure arm-L/R into the screw heads.

8. Removing the Stepping Motor and Brake
   (1) Remove the two screws M3 × 4 and detach the stepping motor.
   (2) Remove the one screw M3 × 6 (ST) and detach the brake.

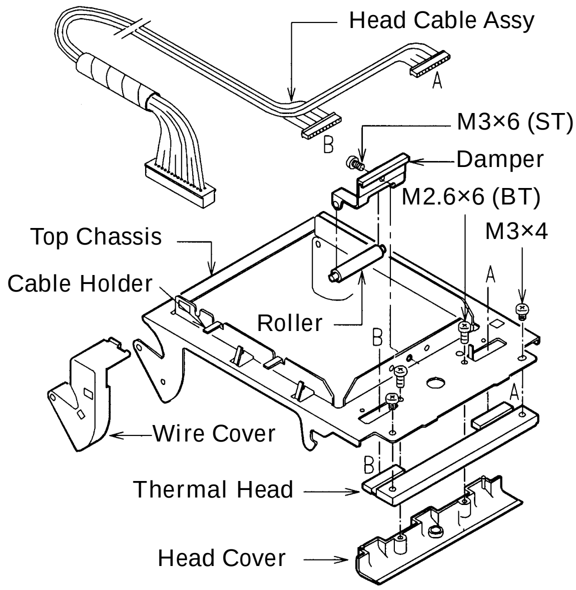


Notes on reassembling:

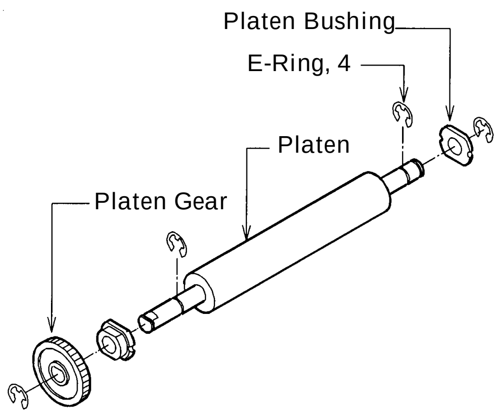
Reassemble the brake in the direction shown in the figure.

When reassembling the stepping motor, position it so that its cable runs downward as shown in the figure.

9. Removing the Top Chassis SA
   (1) Unhook the head cable assy from the cable holder.
   (2) Detach the wire.
   (3) Remove the two screws M2.6 × 6 (BT) and detach the head cover.
   (4) Remove the two screws M3 × 4 and detach the thermal head. Then, disconnect the two connectors from the thermal head.
   (5) Remove the head cable assy by passing its connectors A and B from the holes A and B on the top chassis.
   (6) Remove the one screw M3× 6 (BT) and detach the damper block.
   (7) Remove the roller from the damper.



10. Removing the Platen
   (1) Disengage the two E-ring 4 from both ends of the platen shaft.
   (2) Pull out platen gear from the left side platen bushing.
   (3) Pull out both platen bushings and disengage the two E-ring 4 from the platen.



Notes on reassembling:

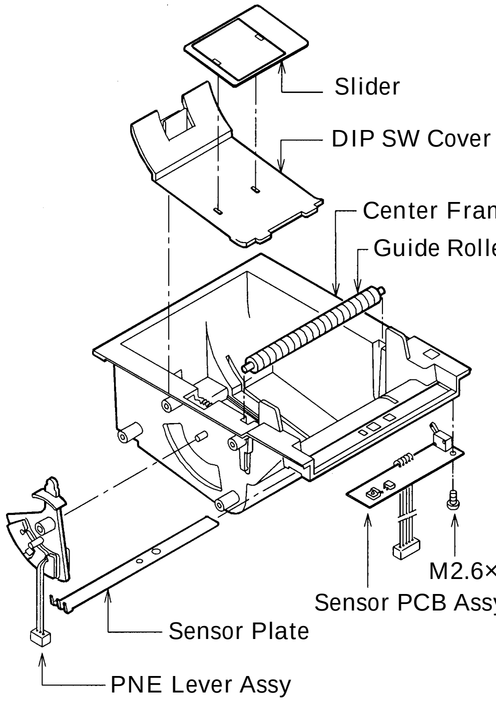
Insert the two platen bushings so that their flat surfaces face inward.

When inserting the platen gear, align its hole with the D-cut on the platen shaft.

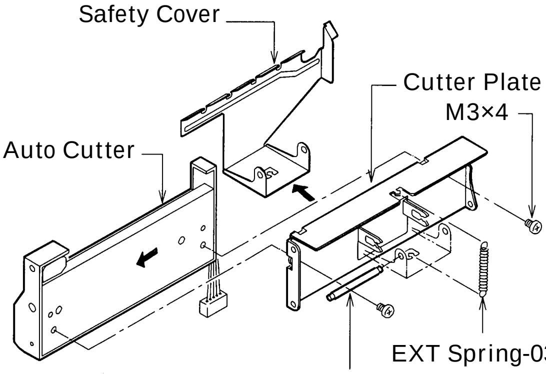
11. Removing the Center Frame
    (1) Remove the PNE lever assy, sensor plate, guide roller and DIP SW cover block.
    (2) Remove the one screw M2.6 × 6 (BT) and detach the sensor PCB assy.
    (3) Remove the slider from the DIP SW cover.

    Note on reassembling:

    When reassembling the sensor PCB assy, hook its one end and then install it with the screw.



12. Removing the Auto Cutter and Its Peripheral Parts
    (1) Remove the two screws M3 × 4 and pull out the auto cutter in the direction shown by the arrow.
    (2) Pull out safety cover shaft from the cutter plate and safety cover.
    (3) Remove the EXT spring-03.
    (4) Detach the safety cover from the cutter plate.



3.2 Reassembly Procedure

Reassemble each part in the reverse order of the disassembly procedure described in Section 3.1. If notes on reassembling are written, follow them.

3.3 Lubrication

Apply the specified lubricant to the indicated places.

3.3.1 Lubricant

Grease: Molykote EM-10L

3.3.2 Where to Lubricate

A. Platen bushings and the platen shafts (2 places each)

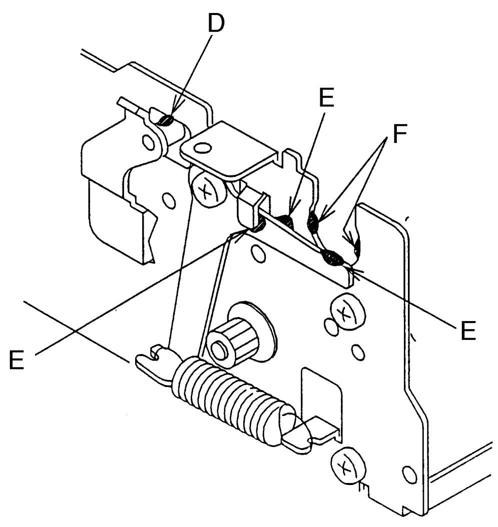
B. Gear shafts of the gear holder (2 places)

C. Sliding surface of the brake disc

D. Lock shaft parts of the lock lever-R/L (2 places on both sides)
(See the following figure.)

E. Sliding parts of the pressure arm-R/L (3 places on both sides)
(See the following figure.)

F. U-shaped grooves of the main chassis, where the platen bushings are engaged (2 places on both sides)
(See the following figure.)



4. TROUBLESHOOTING

4.1 Troubleshooting Procedure

When a trouble occurs, confirm its phenomenon, locate a defective part in accordance with 4.2 Troubleshooting Guide, and troubleshoot as described below.

- Phenomenon: Find a trouble phenomenon in this column. If there are multiple phenomena, take all the corresponding items into consideration. This allows you to specify a hidden defective part.
- Cause: Lists as many possible causes as possible. Guess a trouble cause out of them and take its check method to specify the trouble cause.
- Check Method: Describes a check method to specify a trouble cause.
- Remedy: Troubleshoot by taking a remedy described in this column.

By troubleshooting in accordance with the above-mentioned procedure, you can troubleshoot efficiently with fewer misjudgments.

4.2 Troubleshooting Guide

- **Power Supply Failure**

Phenomenon	Cause	Check Method	Remedy
No power (POWER lamp not illuminated)	The AC adapter is not connected.	————	Connect the specified AC adapter.
	The fuse is gone.	Check whether any unspecified power has been used so far.	Use the specified AC adapter.
		Check whether the specified fuse is used.	Use the specified fuse.
The fuse immediately goes again after replacing with new one.	The control PCB assy is defective.	————	Replace the control PCB assy.
	The circuit drive power is abnormal.	With a DC voltmeter, measure the circuit drive voltage.	Replace the control PCB assy.

✳ If the fuse is gone with the specified AC voltage supplied to the AC adapter, it is likely that the thermal head unit or control PCB assy is defective. Replace either defective one. Incidentally, check the wiring of the drawer and interface cable.

● **Printing failure**

Phenomenon	Cause	Check Method	Remedy
No printing	Faulty DC output voltage from the AC adapter	Check whether the specified AC adapter is used.	Use the specified AC adapter.
	Faulty control PCB assy	―――――	Replace the control PCB assy.
	Faulty connection of the thermal head connector	Check connection of the thermal head connector.	Connect the thermal head connector properly. Or replace the head cable assy.
	Faulty thermal head	―――――	Replace the thermal head.
Partly not printed	Faulty connection of the thermal head connector	Check connection of the thermal head connector.	Connect the thermal head connector properly. Or replace the head cable assy.
	Faulty thermal head	―――――	Replace the thermal head.
Faint printout or uneven printout	Faulty DC output voltage from the AC adapter	Check whether the specified AC adapter is used.	Use the specified AC adapter.
	Low DC output voltage from the AC adapter	Check the DC voltage with a DC voltmeter.	Supply the specified AC voltage to the AC adapter.
	Faulty thermal head	―――――	Replace the thermal head.
	Foreign substance is adhered to the thermal head.	Check whether any foreign substances are adhered to the thermal head.	Dip a cotton swab or soft cloth in ethyl alcohol and wipe the foreign substances with them.
	Non-recommended paper is used.	Check whether the paper being used meets the specification.	Replace it with the specified paper.
	Faulty mounting of the platen roller	Check mounting condition of the platen roller.	Mount the platen roller properly.

● **Paper feed failure**

Phenomenon	Cause	Check Method	Remedy
Paper is not fed or fed irregularly	Faulty connection of the motor connector	Check connection of the motor connector.	Connect the connector correctly.
	Defective motor	Measure the supply voltage with a DC voltmeter or oscilloscope.	If the supply voltage is normal, replace the motor.
	Faulty DC output voltage from the AC adapter	Check whether the specified AC adapter is used.	Use the specified AC adapter.
	Low DC output voltage from the AC adapter	Check the DC voltage with a DC voltmeter.	Supply the specified AC voltage to the AC adapter.
	Faulty control PCB assy	———	Replace the control PCB assy.
	Faulty mounting of the platen roller	Check mounting condition of the platen roller.	Mount the platen roller properly.
	Paper feed failure	Check whether or not the paper is jamming or torn and caught in the paper path.	Eliminate unnecessary paper in the paper path and set paper properly.
	Foreign substance in the gear	Remove the gear holder and check for any foreign substance caught in the gears.	Eliminate the foreign substance.
	Broken gear	Remove the gear holder and check for any breakage of the gears.	If the gear is broken, replace it with new one.

● **Faulty sensor**

Phenomenon	Cause	Check Method	Remedy
Does not detect presence of paper.	Faulty paper sensor	Check whether the ERROR lamp flickers when paper is out.	Replace the sensor PCB assy.
	Foreign substance is attached to the paper sensor.	Check whether any foreign substances are adhered to the paper sensor.	Remove the foreign substance.
	Faulty connection of the paper sensor connector	Check connection of the paper sensor connector.	Connect the connector correctly.
Does not detect paper near-end status.	Faulty paper near-end sensor	Check whether the ERROR lamp flickers when paper is out.	Replace the paper near-end sensor.
	Foreign substance is attached to the paper near-end sensor.	Check whether any foreign substances are adhered to the paper near-end sensor.	Remove the foreign substance.
	Faulty connection of the paper near-end sensor connector	Check connection of the paper near-end sensor connector.	Connect the connector correctly.

● **Faulty auto cutter**

Phenomenon	Cause	Check Method	Remedy
The cutter does not function.	Faulty connection of the auto cutter connector	Check connection of the auto cutter connector.	Connect the connector correctly.
	Faulty DC output voltage from the AC adapter	Check whether the specified AC adapter is used.	Use the specified AC adapter.
	Defective auto cutter	Measure the supply voltage with a DC voltmeter or oscilloscope.	If the supply voltage is normal, replace the auto cutter.
	Paper feed failure (Paper jam)	Check whether or not the paper is jamming or torn and caught in the paper path.	Eliminate unnecessary paper in the paper path and set paper properly.

✳ If the no-paper condition is not detected while the printer is running out of the recording paper, it will print without the paper, leading to a trouble of the head, and so on.

5. SERVICE PARTS LIST

5.1 Parts List for Mechanism

EXPLODED VIEW **1/2**

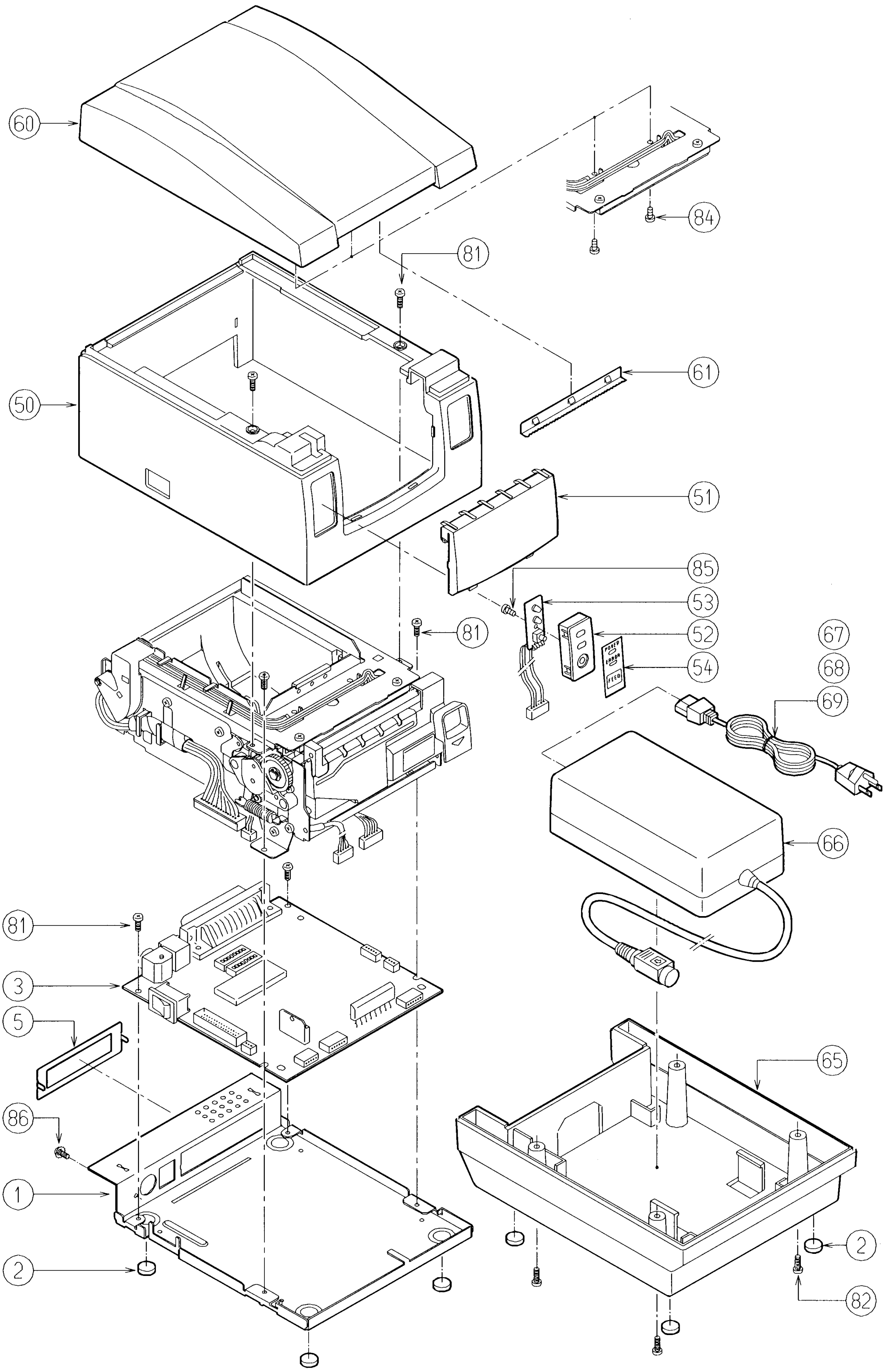
Ref. No.	Parts No.	Description	Q'ty	Remarks
1	E 4002-590	Bottom Chassis	1	
2	E 6302-370	Rubber Foot (ϕ10×3)	4	
3	E 70010990	Control PCB Assy (P)	1	
4	E 70010995	Control PCB Assy (R)		
5	E 6601-410	Serial IF Plate	1	
7	E 4002-600	Main Chassis	1	
8	E 8017-110	Stepping Motor	1	
9	E 8032-120	Pressure Arm-R	1	
10	E 8021-130	Pressure Arm-L	1	
11	23G74985	EXT Spring-01	3	
12	E 8012-030	Lock Lever-R-SA	1	
13	E 8013-040	Lock Lever-L-SA	1	
14	E 6602-140	Ejector	1	
15	E 6602-150	Brake	1	
17	E 8019-200	Reduction Gear	1	
18	E 8516-030	Idle Gear	1	
19	E 8500-100	Gear Holder	1	
22	E 8010-360	Cutter Plate	1	
23	ACC-130	Auto Cutter ACC-130	1	
24	E 8023-130	Safety Cover	1	
25	E 6233-170	Safety Cover Shaft	1	
26	23G74992	EXT Spring-03	1	
28	E 8031-150	Platen	1	
29	E 8025-120	Platen Bushing	2	
30	E 8019-210	Platen Gear	1	
32	E 6601-410	Center Frame	1	
33	E 4019-230	DIP SW Cover	1	
34	E 8037-030	Slider	1	
35	E 8022-150	Guide Roller	1	
36	E 40000350	Sensor PCB Assy	1	
37	E 6601-390	Sensor Plate	1	
38	E 5071-115	PNE Lever Assy	1	

EXPLODED VIEW **2/2**

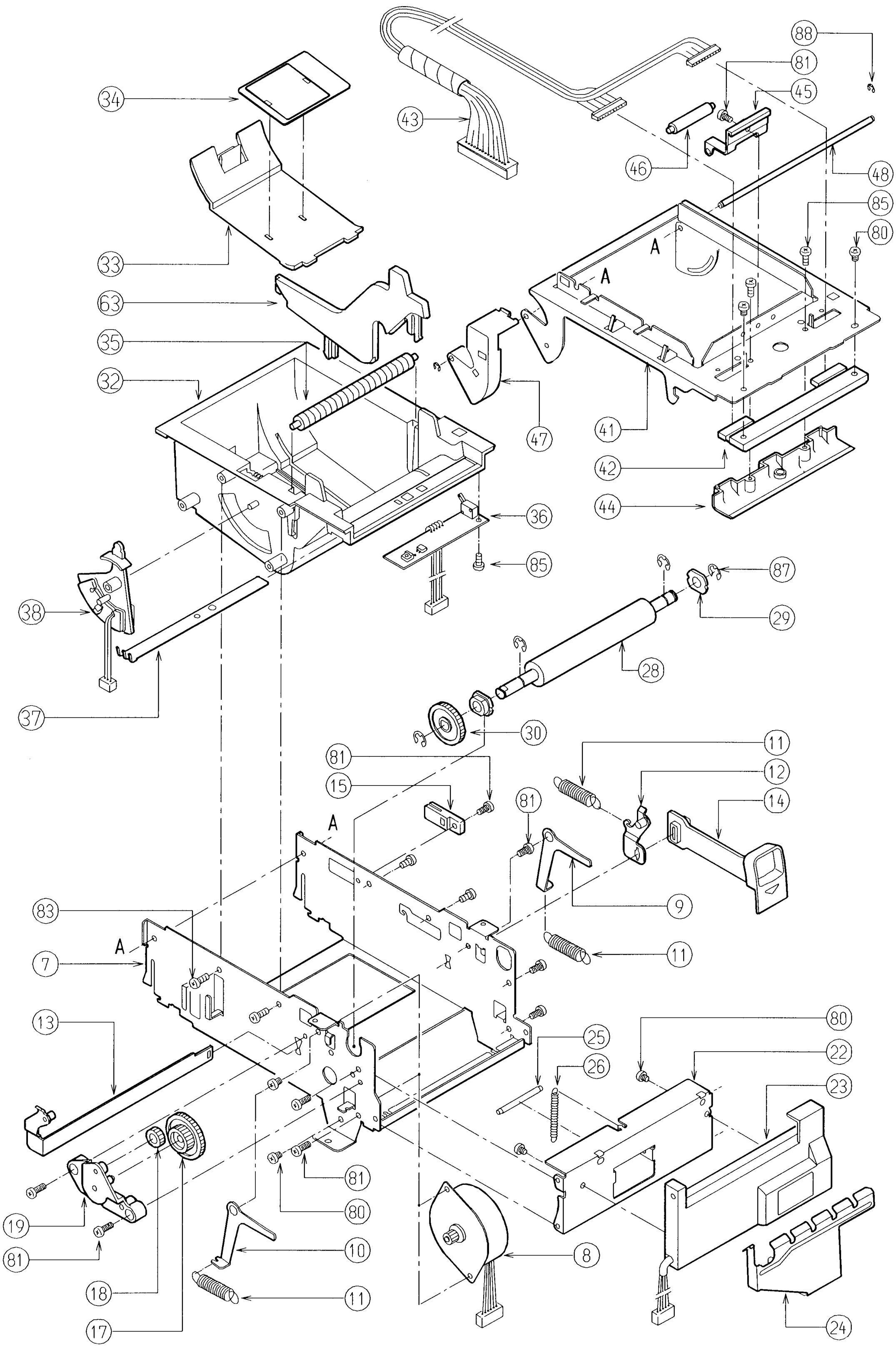
Ref. No.	Parts No.	Description	Q'ty	Remarks
41	E 4002-610	Top Chassis	1	
42		Thermal Head KF2003-GD30C	1	
43	E 4900-650	Head Cable Assy	1	
44	E 8023-120	Head Cover	1	
45	E 6602-160	Damper	1	
46	E 6612-05	Roller	1	
47	E 8023-140	Wire Cover	1	
48	E 6233-180	Chassis Shaft	1	
50	E 66201-090	Top Cover	1	
51	E 6200-700	Front Cover	1	
52	E 40000340	Operation Panel	1	
53	E 40000330	Operation PCB Assy	1	
54	E 5200-370	Operation Sheet	1	
60	E 62040590	Printer Cover	1	
61	E 6220-670	Tear Bar	1	
63	E 6601-400	Partition	1	
65	E 62020420	Power Case	1	
66	31AD	AC Adapter 31AD	1	
67	E 6100-765	AC Cord-100V	1	
68	E 6100-755	AC Cord-120V		
69	E 6100-730	AC Cord-230V		
70		Caution Label, Paper	1	
71		Caution Label, Hot	1	
72		Caution Label, Drawer	1	
80	23G75069	Screw, PH, M3×4	6	
81	23G22579	Screw, PHT (ST), M3×6	15	
82	23G22821	Screw, PHT (ST), M3×8	4	
83	23G23251	Screw, PHT (BT), M3×6	4	
84	23G22796	Screw, PHT (BT), M3×8	2	
85	23G23179	Screw, PHT (BT), M2.6×6	4	
86	23G42966	Screw, PHT (ST, EXT, TW), M3×6	1	
87	23G22829	E-Ring, 4	4	
88	23G65865	E-Ring, 2	2	

5.2 Disassembly Drawing

● **Disassembly Drawing-1**



● Disassembly Drawing-2



5.3 Parts List for Control PCB Assy

5.3.1 Control PCB Assy 1/3

Ref. No	Parts No.	Description		CBM1000 R	CBM1000 P
IC1	E 107-390	CPU	HD6432350F20	1	1
IC2	E 104-530	Gate Array	CBM202LA-00	1	1
IC3	E 107-400	Flash Memory	M29F400B-70N1	1	1
IC4	E 107-380	SRAM	TC551001CF-55L	1	1
IC5	E4101-720	DC/DC Converter	SI-8401L	1	1
IC6	E210-130	Reset IC	M51953BPF	1	1
IC7,8	E2020050	I/F IC	SP232ACP	2	
IC7,8	E2010680	HC-MOS	SN74HC05NS		2
IC9	E2010690	HC-MOS	SN74HC244NS		1
IC101		Kanji ROM	CBM202KG-01	1	1
TA1	E 390-380	Tr. Array	SMA7022MU	1	1
TA2	E 390-230	Tr. Array	TA8428K	1	1
TR1,6,7	E 358-080	Transistor	RN1302	3	3
TR2	E 358-090	FET	2SJ267	1	1
TR3,4,8,9,14	E 358-120	Transistor	RN1310	5	5
TR5,10,11,15 16	E 359-210	Transistor	2SC2712	5	5
TR12,13	E 359-180	Transistor	2SC4671	2	2
TR17	E 358-130	Transistor	RN2302	1	1
D1	E 400-610	Diode	1SS193	1	1
ZD1	E 406-070	Z. Diode	RD6.2FMB2	1	1
C1-4,31		C. Cap.	GRM1545B224K630PT	5	5
C5		C. Cap.	GRM42-6F474Z50PT	1	1
C6,7,10-13,20 29,117-124		C. Cap.	GRM40F104Z50PT	16	16
C8		Ele. Cap.	35ZL1000M	1	1
C9		Ele. Cap.	16ZL470M	1	1
C14,15,18 102		C. Cap.	GRM40B471K50PT	4	4
C16,17		C. Cap.	GRM40B222K50PT	2	2
C19,21-28		C. Cap.	GRM40B102K50PT	9	9
C30		C. Cap.	GRM1545B224K630PT	1	
C30		C. Cap.	GRM42-6F474Z50PT		1
C32-41		C. Cap.	GRM40F104Z50PT	10	
C32		C. Cap.	GRM1545B224K630PT		1
C33,34		C. Cap.	GRM40B102K50PT		2
C35		C. Cap.	GRM40B471K50PT		1

2/3

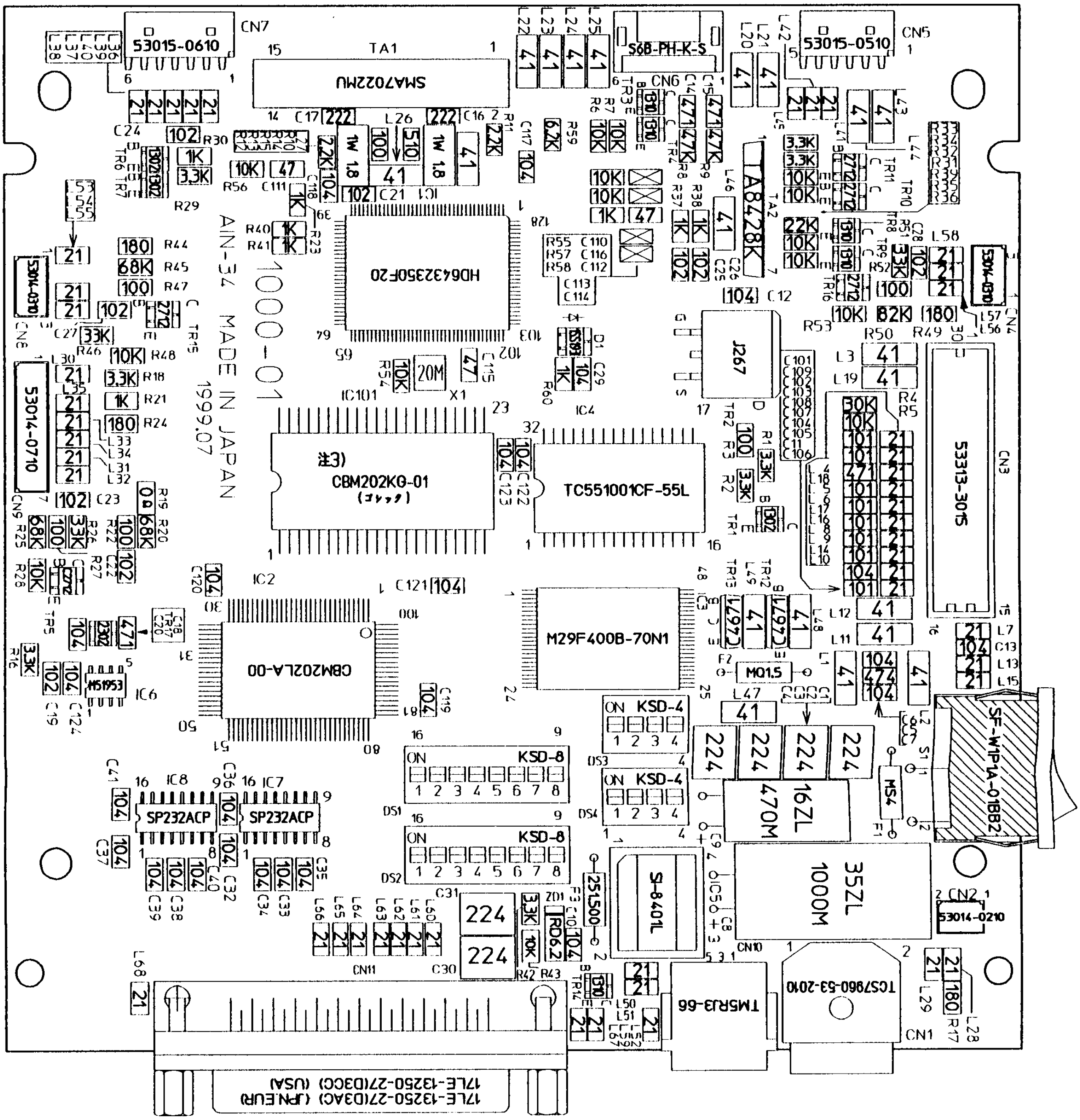
Ref. No	Parts No.	Description		CBM1000 R	CBM1000 P
C101,103-109		C. Cap.	GRM40CH101J50PT	8	8
C111,112,115		C. Cap.	GRM40CH470J50PT	3	3
C125-127		C. Cap.	GRM40F104Z50PT		3
RA1,2	E 3500-370	Re. Array	BCN31-8SI332J		2
R1,2,16,18,29 33,34,42		Chip Re.	CR10-332J	8	8
R3,15,22,27 47,52		Chip Re.	CR10-101J	6	6
R4		Chip Re.	CR10-303J	1	1
R5-7,28,31,32 35,36,43,48 53-57		Chip Re.	CR10-103J	15	15
R8,9		Chip Re.	CR10-473J	2	2
R10,13		Chip Re.	CR01-18Ω J	2	2
R11,12		Chip Re.	CR10-222J	2	2
R14		Chip Re.	CR10-511J	1	1
R17,24,44,49		Chip Re.	CR10-181J	4	4
R19		Chip Re.	CR10-0ΩJ	(1)	(1)
R20,25,45		Chip Re.	CR10-683J	3	3
R21,23,30,37 38,40,41,58 60		Chip Re.	CR10-102J	9	9
R26,46,51		Chip Re.	CR10-333J	3	3
R39		Chip Re.	CR10-223J	1	1
R50		Chip Re.	CR10-823J	1	1
R59		Chip Re.	CR10-622J	1	1
R61		Chip Re.	CR10-101J		1
L1,2,3,11,12 19-27, 43,44 46-49	E 4009-480	Fe. Beads	BLM41P600S	20	20
L4-10,13-18 28-42,45 50-68	E 4009-490	Fe. Beads	BLM21A121S	48	48
L69-82	E 4009-490	Fe. Beads	BLM21A121S		14
DS1,2	E 5103-230	DIP SW.	KSD08	2	2
DS3,4	E 5103-390	DIP SW.	KSD04	2	
CN1	E 48000690	Connector	TCS7960-53-2010	1	1
CN2	E 48000940	Connector	53014-0210	1	1

3/3

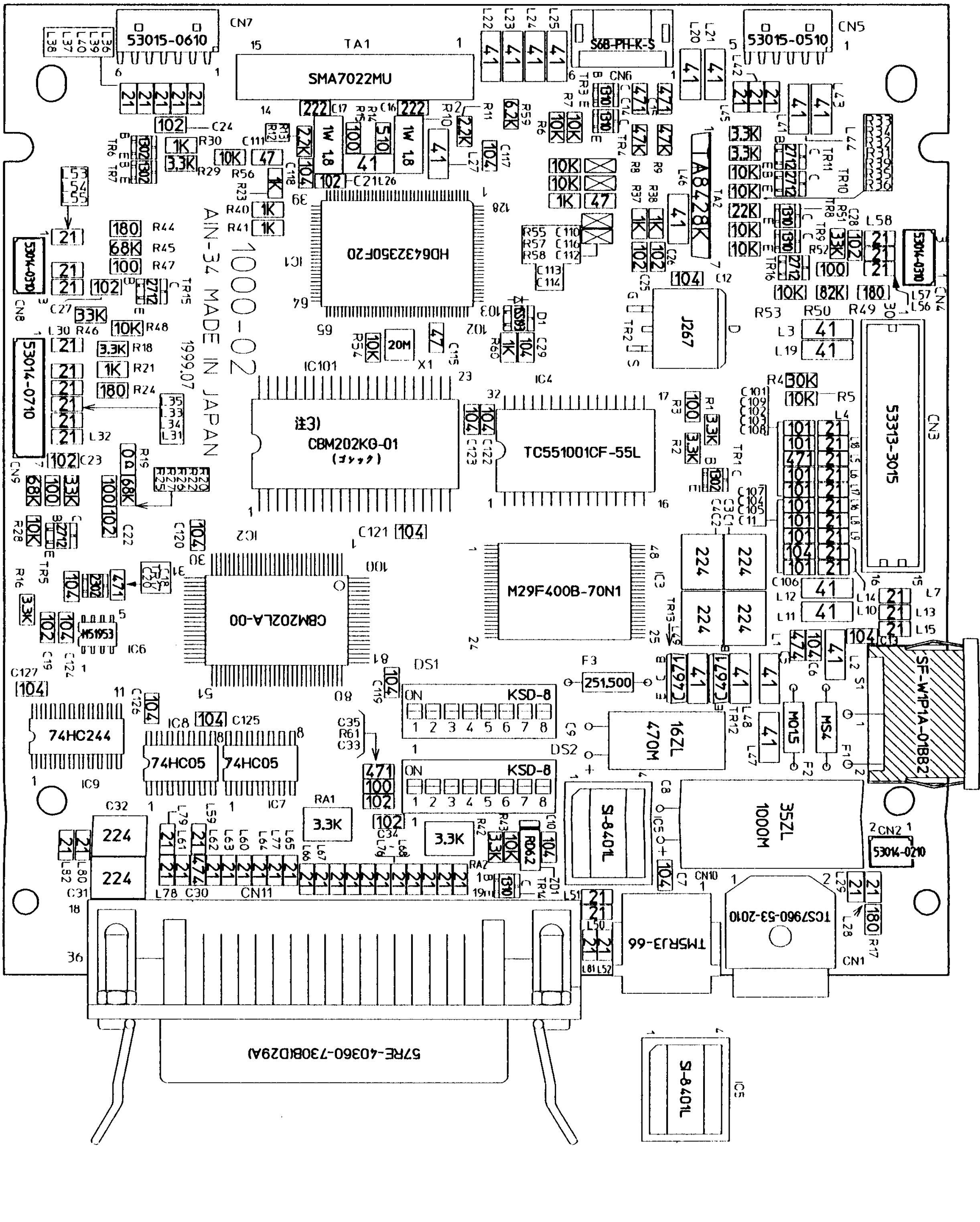
Ref. No	Parts No.	Description		CBM1000 R	CBM1000 P
CN3	E 48000945	Connector	53313-3015	1	1
CN4	E 48000755	Connector	53014-0310	1	1
CN5	E 48000765	Connector	53015-0510	1	1
CN6	E 48000955	Connector	S6B-PH-K-S	1	1
CN7	E 48000930	Connector	53015-0610	1	1
CN8	E 48000755	Connector	53014-0310	(1)	(1)
CN9	E 48000950	Connector	53014-0710	1	1
CN10	E 48000705	Connector	TM5RJ3-66	1	1
CN11	E 48000640	Connector	17LE-13250-27 (D3AC)	(1) (JPN,EUR)	
	E 48000645		or 17LE-13250-27 (D3CC)	(1) (USA)	
CN11	E 48000830	Connector	57RE-40360-730B (D29A)		1
S1	E 4003-630	SW.	SF-W1P1A-01BB2	1	1
F1	E 4005-840	Fuse	MS4	1	1
F2	E 4005-770	Fuse	MO1.5	1	1
F3	E 4005-815	Fuse	251.500	1	1
X1	E 501-430	X'tal	CSTCV20.00MXJ040	1	1
PCB		PCB	1000-01	1	
PCB		PCB	1000-02		1
		ROM Label	PLD-21	1	1

5.4 Parts Layout Drawing

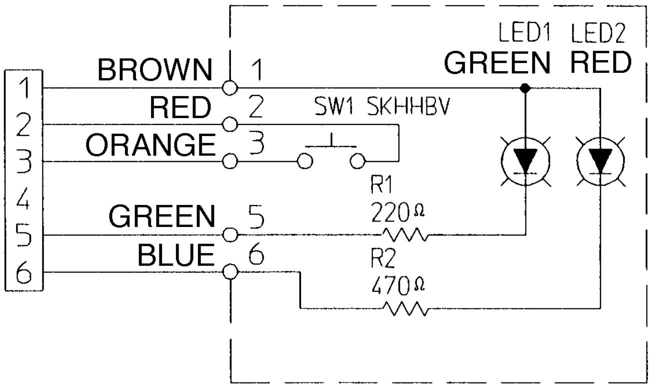
5.4.1 Control PCB Assy (Serial Interface D-sub 25)

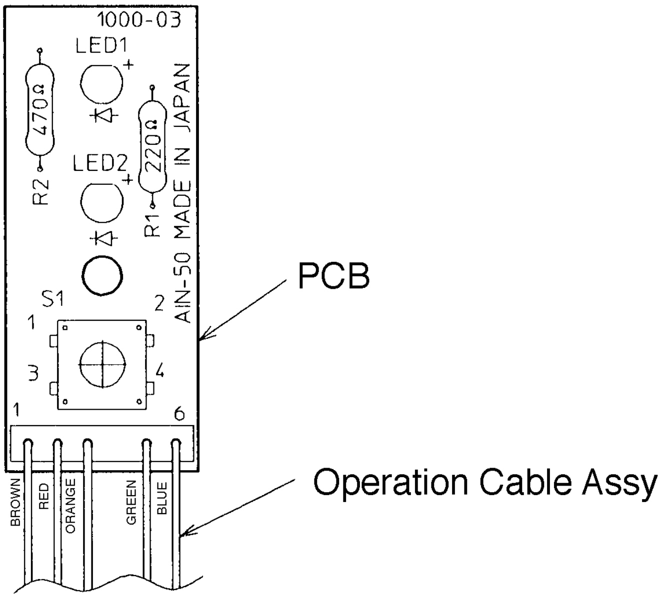


5.4.2 Control PCB Assy (Parallel Interface)



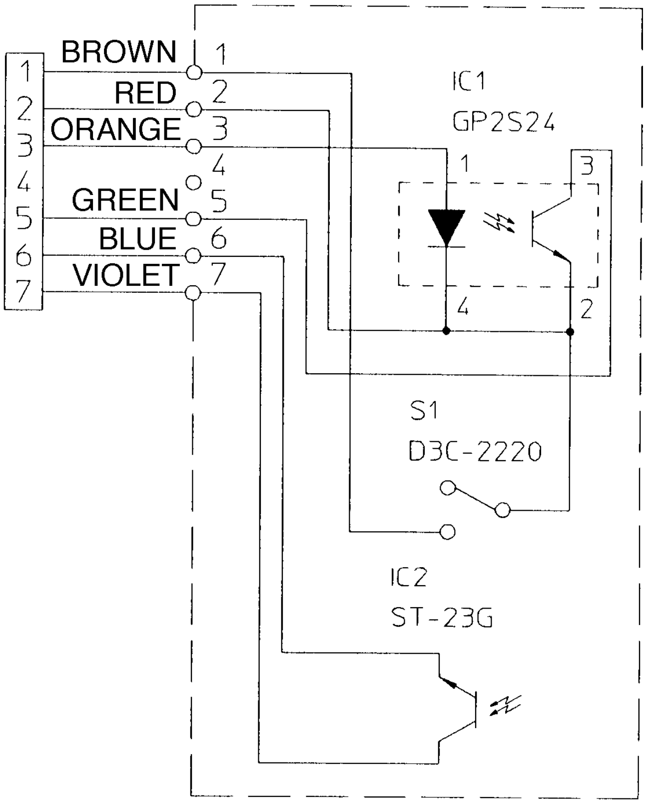
5.4.3 Operation PCB Assy

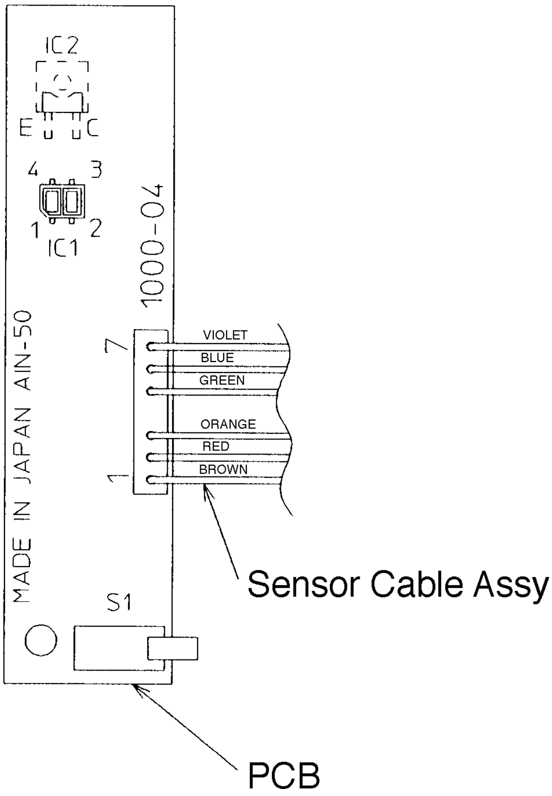




Ref. No	Description	
LED1	LED	SEL-2410E (GREEN)
LED2	LED	SEL-2110S (RED)
R1	Resistor	RD25M10-220Ω
R2	Resistor	RD25M10-470Ω
S1	Tact Switch	SKHHBV
	Operation Cable Assy	SEC-2855
	PCB	1000-03

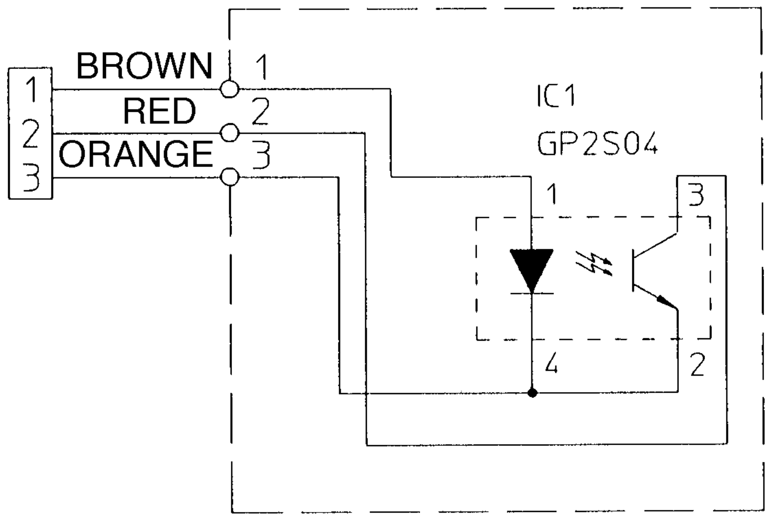
5.4.4 Sensor PCB Assy

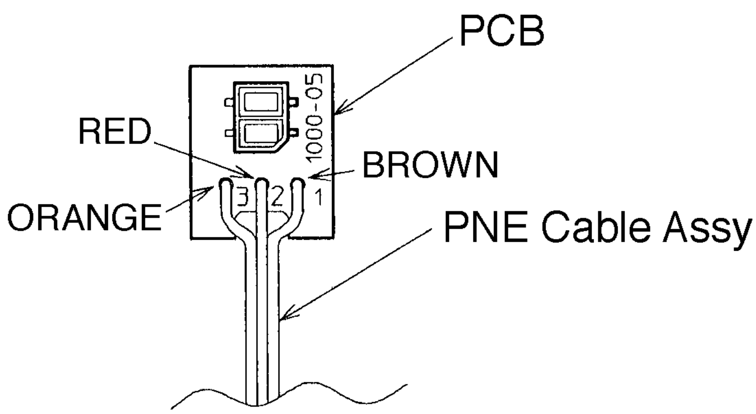




Ref. No	Description	
IC1	Interrupter	GP2S24
IC2	Photo Transistor	ST-23G-C
S1	Micro Switch	D3C-2220
	Sensor Cable Assy	SEC-2853
	PCB	1000-04

5.4.5 PNE PCB Assy in PNE Lever Assy





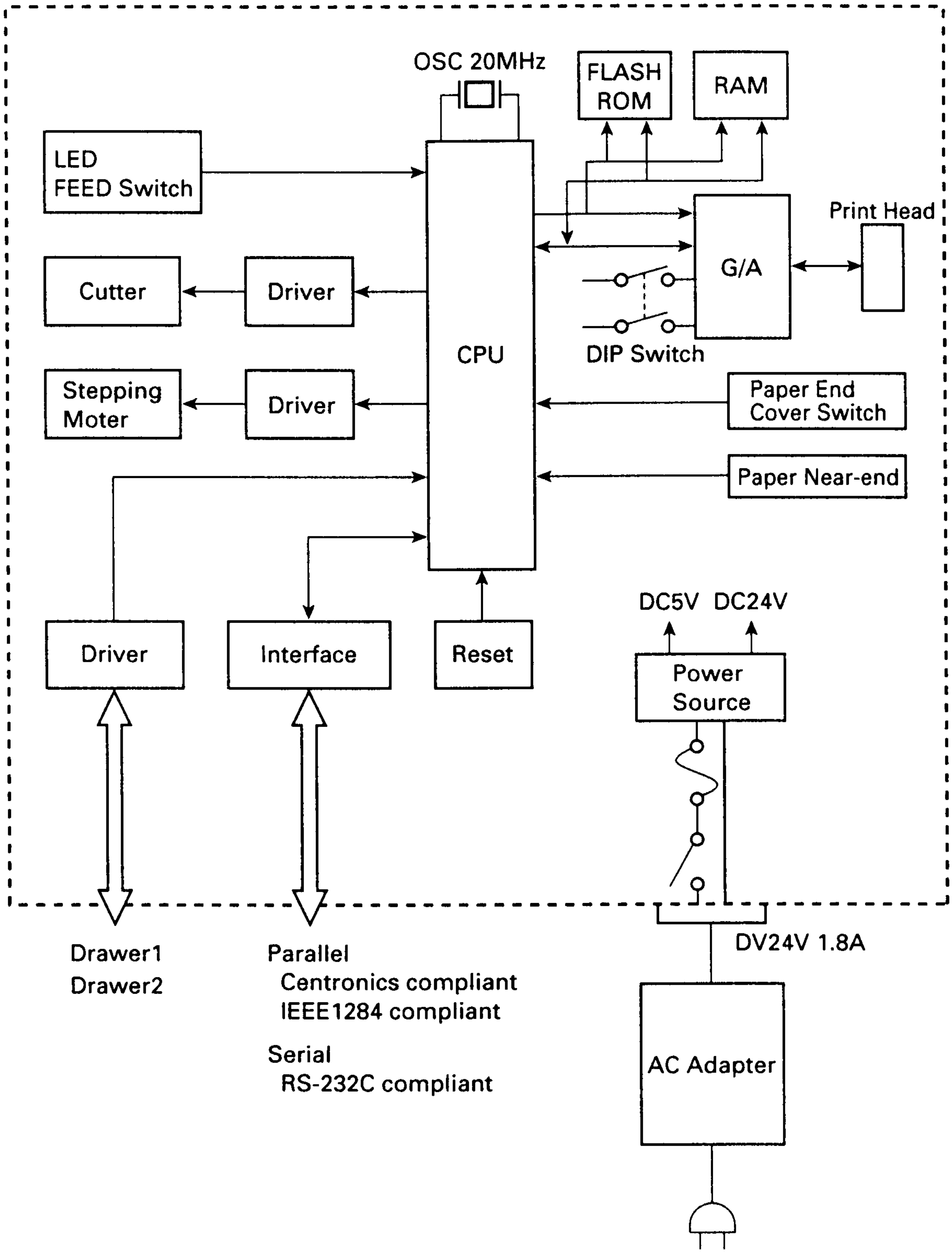
Ref. No	Description	
IC1	Interrupter	GP2S24
	PNE Cable Assy	SEC-2854
	PCB	1000-05

6. DRAWING

The following lists the reference drawings for maintenance, and so on.

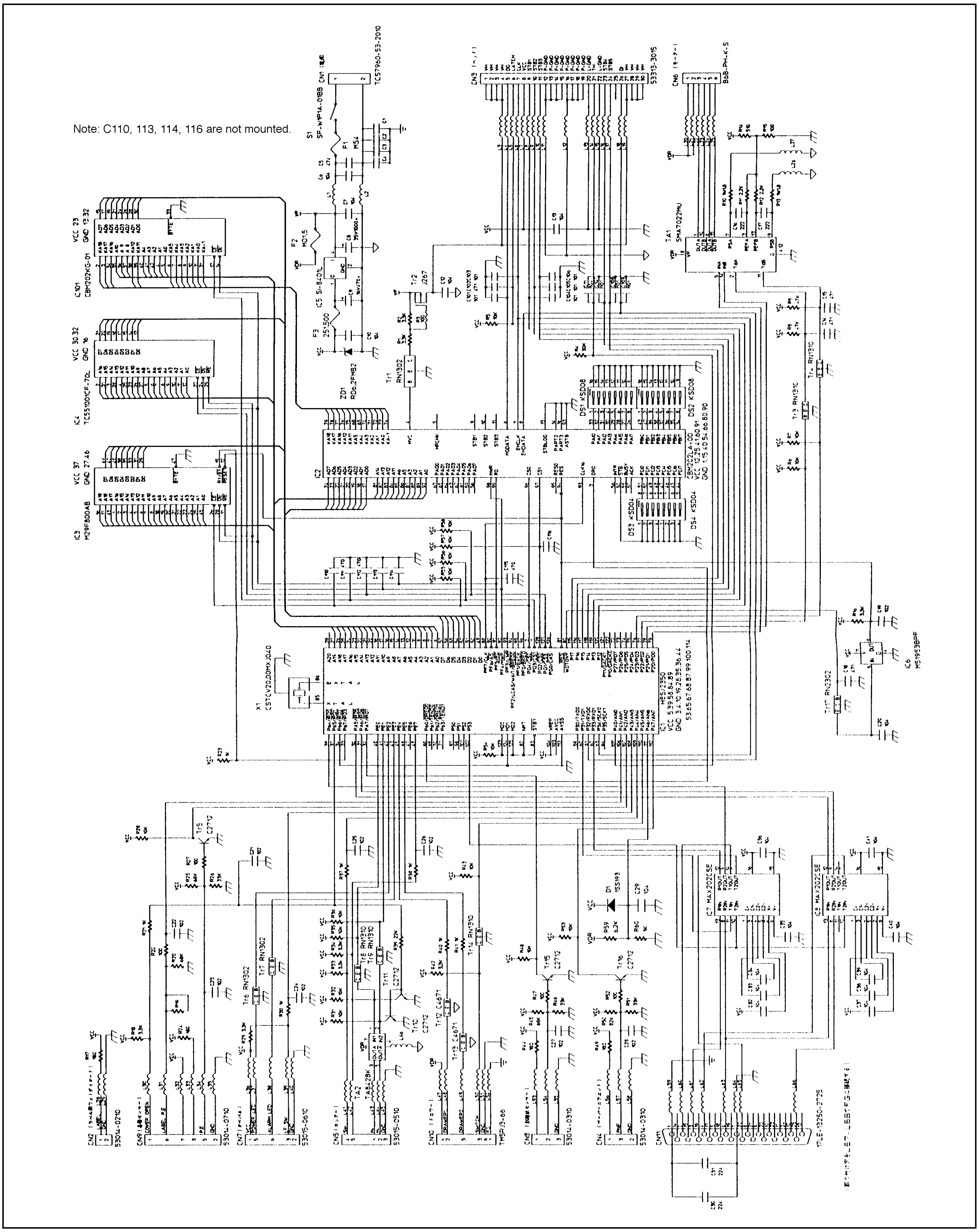
- Block diagram
- Circuit diagrams for the following circuits
  - Control PCB Assy (Serial Interface)
  - Control PCB Assy (Parallel Interface)

6.1 Block Diagram

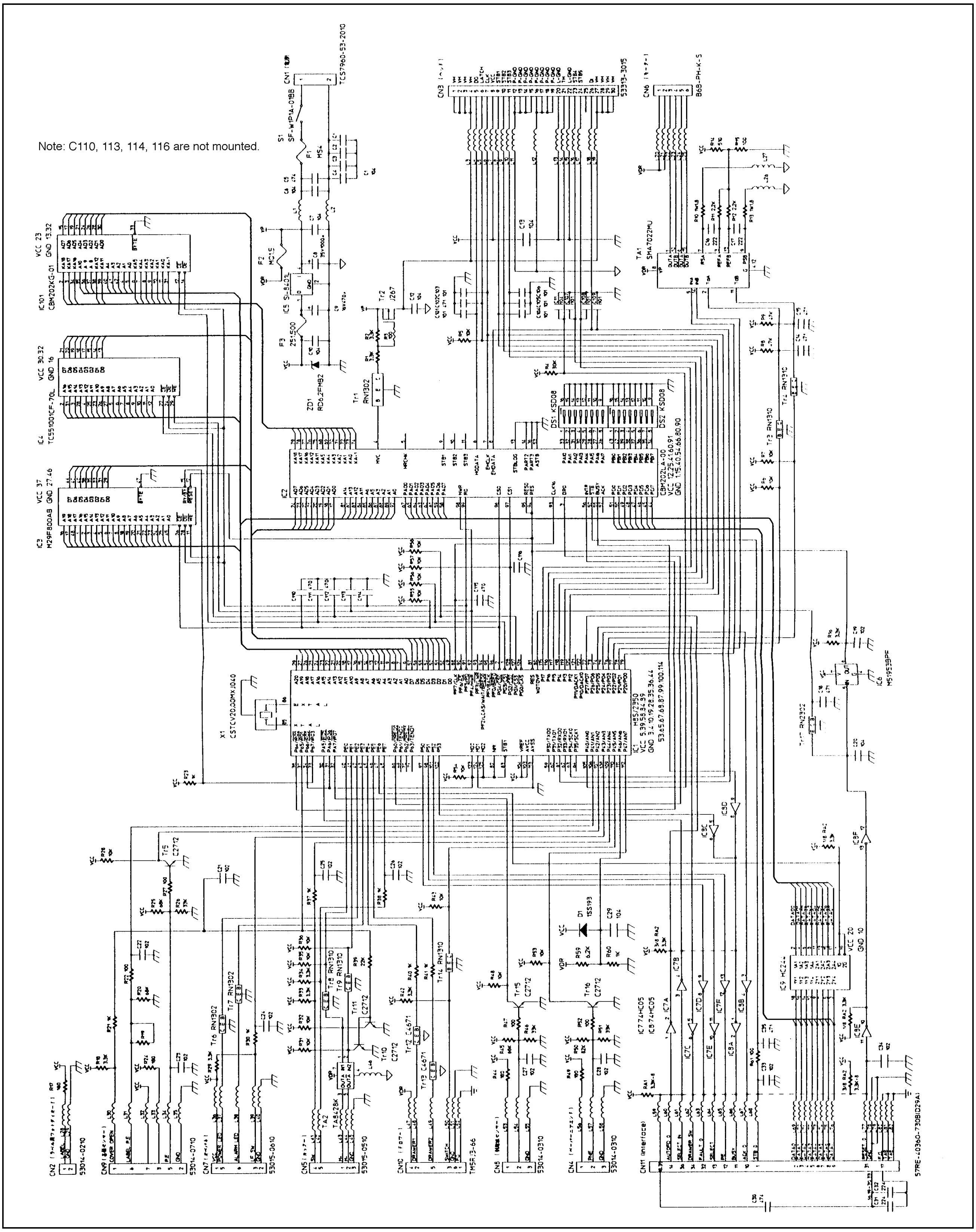


6.2 Circuit Diagram

6.2.1 Control PCB Assy (Serial Interface D-sub 25)



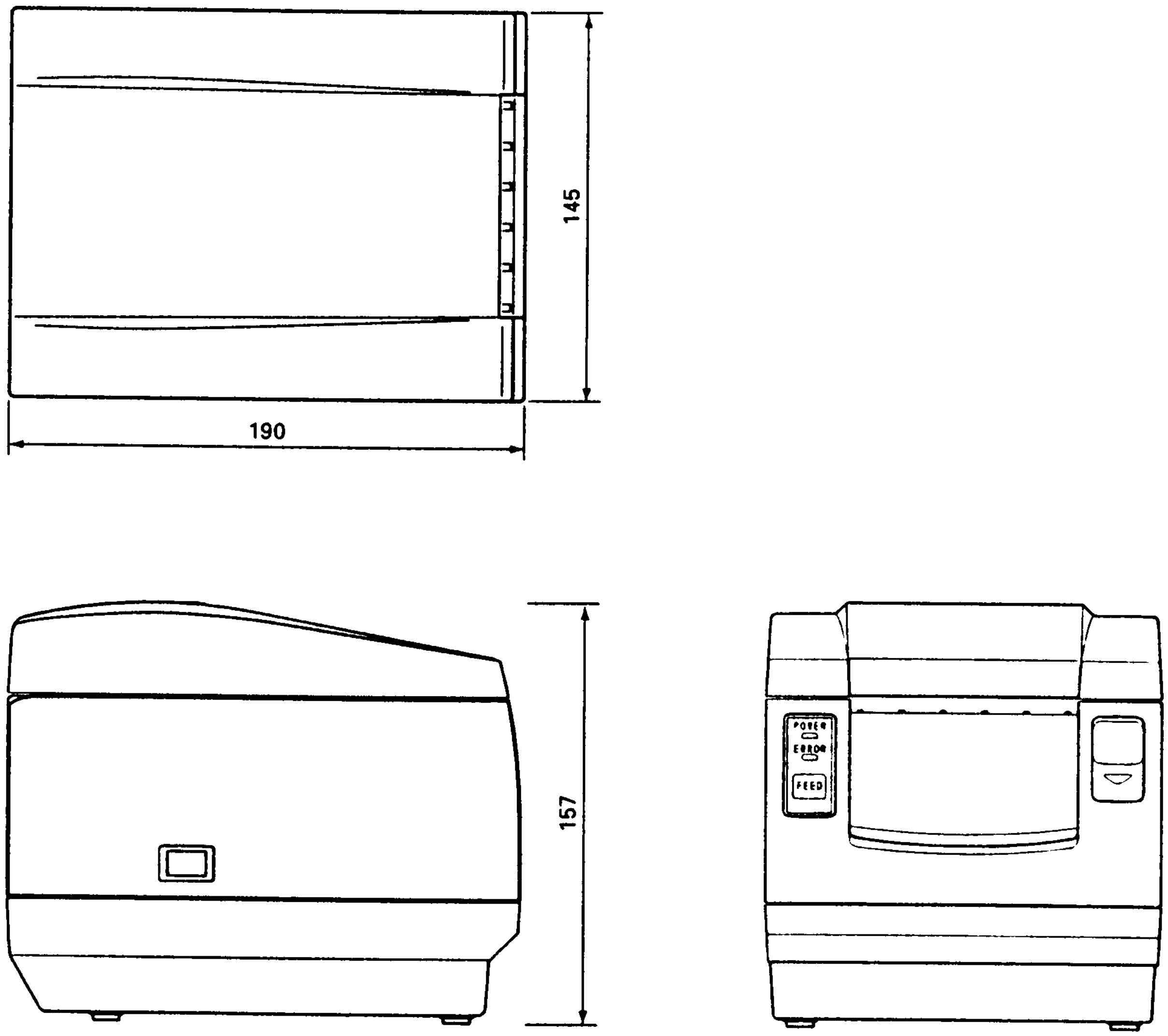
6.2.2 Control PCB Assy (Parallel Interface)



7. OUTER DIMENSION

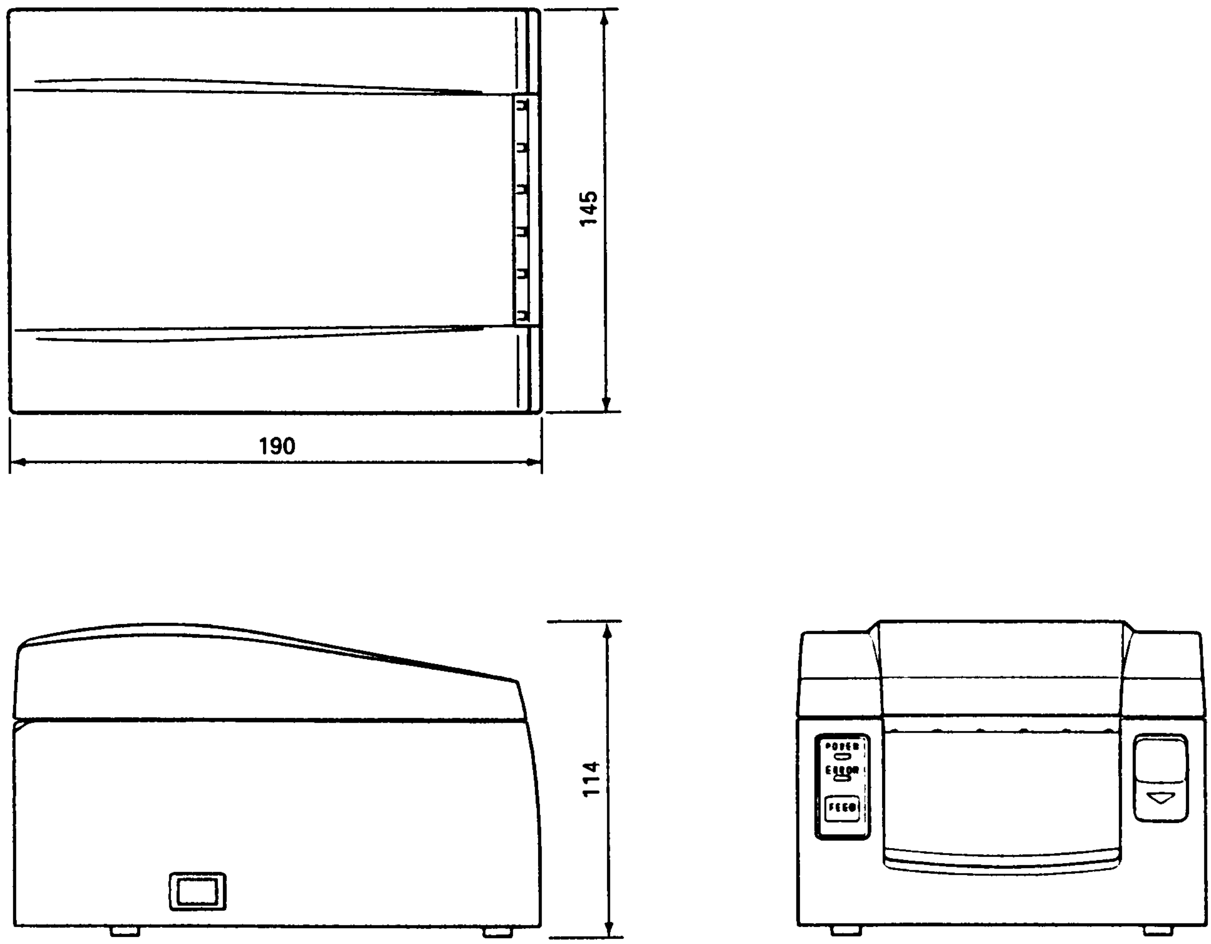
● CMB1000S

Unit: mm



● **CBM1000A/CBM1000D**

Unit: mm



● AC Adapter (31 AD)

Unit: mm

